Towards an e-infrastructure for Open Science in Agri-food: Contribution to the EOSC Declaration

Endorsed on 15th November 2017

With this document the e-ROSA partners endorse the EOSC Declaration and commit to contribute to the realization of the European Open Science Cloud (EOSC) in 2020.

The European project e-ROSA[1] (Towards an e-infrastructure Roadmap for Open Science in Agriculture) seeks to build a shared vision of a future sustainable e-infrastructure for Open Science in agriculture & food. It aims at facilitating the co-development of a common roadmap by and for involved research communities and key stakeholders related to scientific data and research infrastructures, in line with the EOSC vision, agenda and architecture.

The agri-food sector relies on a complex science that requires multidisciplinary, multiscale and geolocation-based approaches. This implies a significant amount and variety of agricultural data and models, which has been increasing exponentially with the adoption of more and more systemic perspectives, the automation of data collection (e.g. thanks to robots, UAV, connected sensors), new engineering tools such as in the omics field, as well as with the development of new types of data sources (e.g. Internet of Things, crowd-sourcing, text mining).

The ability to share, access and integrate these heterogeneous data is a key issue in order to tackle today's societal challenges[2], especially in addressing climate change impacts on food security, providing healthy and nutritious food to all, developing sustainable food value chains as well as providing support for local agricultural development. In order to address these growing challenges faced by the global food system, more and more research and innovation is depending on suitable exploitation of data resources and digital technologies. Thus, there is a pressing need for the development of a common e-infrastructure that connects data, infrastructures, resources and people and that allows to share efforts and expertise, and support innovation.

Agri-food science and innovation would benefit hugely from a common data ecosystem. Produced and used by diverse stakeholders including academic researchers but also – and of course – farmers, the industry, extension services and – last but not least – citizens, a shared global data space would help build the infrastructures that will propel the industry forward. In particular, the farm has to become part of the research environment as the supply chain needs to feed back to the lab and to the farm. Also, citizens, and especially consumers, can act as data producers and actively participate in the collection of data and information.

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[1] www.erosa.aginfra.eu

[2] https://horizon-magazine.eu/article/future-proofing-europes-food-supply-relies-sharing-research-data-dr-panagiotis-zervas_en

Commitments to implement the EOSC for agri-food science

In order to support the effective implementation of EOSC in the agri-food sector in 2020, the e-ROSA partners commit to:

1. Set out the roadmap for open science for agriculture and food systems, in line with the EOSC Declaration, the GODAN Data Ecosystem paper[3] and the Open Harvest Chania Declarations n°1[4] and n°2[5];

2. Engage the community within the agriculture and food science at a European and global level, and establish a link with existing generic e-infrastructures and future EOSC strategic and technical (i.e. architecture) developments to communicate on specific community needs and keep the latter at the heart of the system, as well as to ensure access to technological services for the agri-food community (e.g. HPC, authentication, storage, connectivity);

3. Actively take part in the development of the EOSC Governance Board and Stakeholder Forum, and support the practical implementation of policy and stakeholder frameworks related to EOSC to meet societal challenges at local, national and global levels: adaptation of agricultural production systems to climate and land use changes, global nutrition, optimization of food value chains, food safety, etc.;

4. Improve data stewardship, sharing and reuse pro-actively for more efficient agri-food research and foster a "data culture" within the agri-food community through dedicated mechanisms (e.g. incentives, design and use of Data Management Plans, certified data repositories), advocate for the implementation of the FAIR Principles[6] and Open Data ("as open as possible, as closed as necessary") throughout the different stakeholder groups including academia, policy-making and the private sector;

5. Work on interoperability across data sources and on shared standards to enable the FAIR sharing of data and other digital resources (e.g. codes, models, workflows) in agriculture and food, build on the AgriSemantics[7] initiative to promote common, shared semantic resources for agri-food research;

6. Build on the existing European AgINFRA+[8] e-infrastructure and establish specific infrastructures and services as relevant for agriculture and food science to stimulate collaboration in an open way, support the development of Food Cloud demonstrators that can help tackle pressing scientific and societal challenges;

7. Foster distributed efforts and flexible governance for long-term empowerment by and sustainability within the agri-food community, help develop appropriate business models for data sharing and related services, especially for our "common goods" such as those supporting semantic interoperability (e.g. GACS[9]) and data discovery (i.e. common catalogs);

8. Support capacity-building through the establishment of Competence Centres across Europe and worldwide in order to develop the required skills to implement the EOSC in the agri-food sector and in synergy with relevant European Digital Innovation Hubs and industry-driven initiatives.

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[3] http://www.godan.info/documents/global-data-ecosystem-agriculture-and-food
[4] http://blog.agroknow.com/wp-content/uploads/2016/05/Chania-Declaration.pdf
[5] https://drive.google.com/file/d/0B41Vz7BieQuoY19CYlBISklxbmc/view
[6] https://www.force11.org/fairprinciples
[7] http://agrisemantics.org/
[8] http://www.plus.aginfra.eu/
[9] http://agrisemantics.org/gacs/